



Issued on 12.12.2024

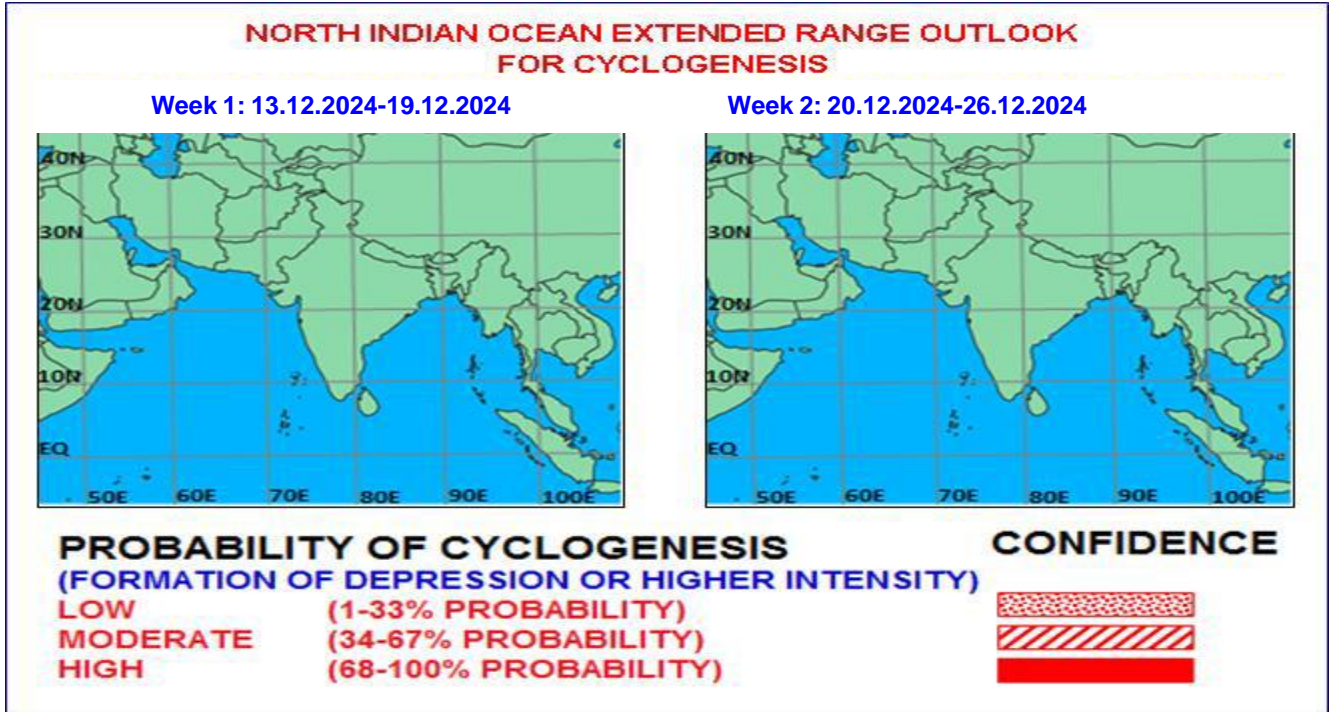


Fig. 1: Graphical Cyclogenesis over the north Indian Ocean during next two weeks

I. Environmental features:

The ECMM-based guidance indicates that the Madden Julian Oscillations (MJO) is currently in phase 5 with an amplitude of around 1. It would continue in the same phase till the first half of week 2 with gradually decreasing amplitude but remaining more than 1. Thereafter, it would move across phase 6 with amplitude remaining more than 1.

The CFS-NCICS model-based forecast indicates westerly wind anomaly (3-5 mps) over the Equatorial Indian Ocean (EIO) and adjoining South Andaman Sea & Southeast Bay of Bengal (BoB) along with Equatorial Rossby Waves (ERW) and Kelvin Waves (KW) and easterly winds anomaly (1-3 mps) during the first half of week 1. Thereafter, no significant waves are seen over the region during the remaining part of the forecast period.

Considering all the above, the equatorial waves are likely to contribute towards the enhancement of convective activity over the south Bay of Bengal during the first half of week 1.

II. Model Guidance:

ECMWF and IMD-GEFS indicate a Low-Pressure Area over southeast BoB and adjoining Andaman Sea from 14th December, it is likely to move westwards and reach Sri Lanka and Tamil Nadu coasts by the 16th December without any significant intensification. IMD GFS, NCEP-GFS and NCUM (G) is indicating a Low-Pressure Area over southeast BoB and adjoining Andaman Sea from 15th December that is likely to move west-northwestwards to reach north Sri Lanka and Tamil Nadu coasts by the 17th December with moderate intensification in the NCUM (R) forecasts. The NEPS model indicates no significant system over BoB during next 3 days.

IMD WRF like NCUM (G) indicates an extended low over coastal areas of north Sri Lanka and adjoining Tamil Nadu coasts as on today the 12th December, which will become less marked by tomorrow, the 13th December. NCUM (R) predicts a Low Pressure Area over the southeast Arabian Sea off Kerala Coast by 13th December, it will have westward movement till 15th December.

The GPP guidance products indicate that a zone of significant values of GPP (>25) is prevailing over the Gulf of Mannar and neighbourhood on 12th December. The zone gradually moves west-northwestwards towards South Tamil Nadu and weakens gradually during the next 12 hours. Another zone of GPP(>25) is prevailing over the south Andaman Sea and adjoining southeast Bay of Bengal. It will move west-northwestwards and reach Tamil Nadu-Andhra Pradesh coasts by 18th December.

The 850 hPa wind field of the IMD ERF Model is indicating a trough of low over south Bay of Bengal and adjoining Equatorial Indian Ocean during week 1 and similarly during week 2. 850 hPa wind anomaly field also indicates an extended low over South BoB during week 1. The model also indicates a low probability (20-30 %) of cyclogenesis over South BoB during week 1. The ECMM model indicates a low probability (20-30%) likelihood of cyclogenesis over the southwest Bay of Bengal during the first half of week 1. The ECMWF ensemble model suggests a low probability (less than 30 %) of cyclogenesis during the middle of the first week. The ECMWF ERF model also suggests a low probability (10-20%) of cyclogenesis during week 1 and a very low (10%) probability during week 2.

Legends: MJO: Madden Julian Oscillation, ERW: Equatorial Rossby Waves, KW: Kelvin Waves, NCICS: North Carolina Institute for Climate Studies (for Equatorial waves Forecast), IMD GFS: India Meteorological Department Global Forecast System, NCUM: National Centre for Medium-Range Weather Forecasting Centre (NCMRWF) Unified Model, ECMWF: European Centre for Medium-Range Weather Forecasting, ECMF: ECMWF-Ensemble System, ECMM: ECMWF-Ensemble System Bias Corrected, GPP: Genesis Potential Parameter, NCEP GFS/GEFS/CFS: National Centre for Environment Prediction GFS/GEFSv12/CFSv2, IMD-GEFS: GFS ensemble forecast system of IMD, NEPS: NCUM ensemble prediction system, CNCUM: Coupled NCUM, CPC: Climate Prediction Centre, NWS: National Weather Service, INCOIS: Indian National Centre for Ocean Information Services.

III. Inference:

Considering all the above environmental conditions and model guidance it is inferred that

- (i) There is no probability of cyclogenesis over both the basins of the North Indian Ocean during the next two weeks. However, there is a likelihood for the formation of a low pressure area over southeast Bay of Bengal around 14th December. It is likely to move nearly west-northwestwards, become more marked and reach Tamil Nadu- North Sri Lanka coasts around 16th December.
- (ii) The current well marked low pressure area over the Gulf of Mannar and the neighbourhood is likely to move west-northwestwards and weaken gradually during the first half of week 1.

IV. Verification of forecast issued during last two weeks:

The forecast issued on 28th November for week 2 (6 Dec-12 Dec) indicated no probability of cyclogenesis during week 2.

The forecast issued on 5th December for week 1 (6 Dec-12 Dec) indicated possibility of

formation of a low pressure area over central parts of south Bay of Bengal around 7th December. It was forecasted that the system is likely to move west-northwestwards and reach over southwest Bay of Bengal off Sri-Lanka – Tamil Nadu coasts around 12th December.

Actually, a fresh cyclonic circulation formed over Equatorial Indian Ocean & adjoining southeast Bay of Bengal on 6th December, 2024. Under its influence, a Low-Pressure Area formed over southeast Bay of Bengal & adjoining Equatorial Indian Ocean on 7th December, 2024. It became well-marked low pressure area over the same region on 10th December, 2024. It lay over Gulf of Mannar & neighbourhood on 12th December, 2024. Thus, likely formation of low pressure area over southeast Bay of Bengal was correctly captured one week in advance.

NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from, 5th December – 11th December, 2024 are presented in **Fig. 2**.

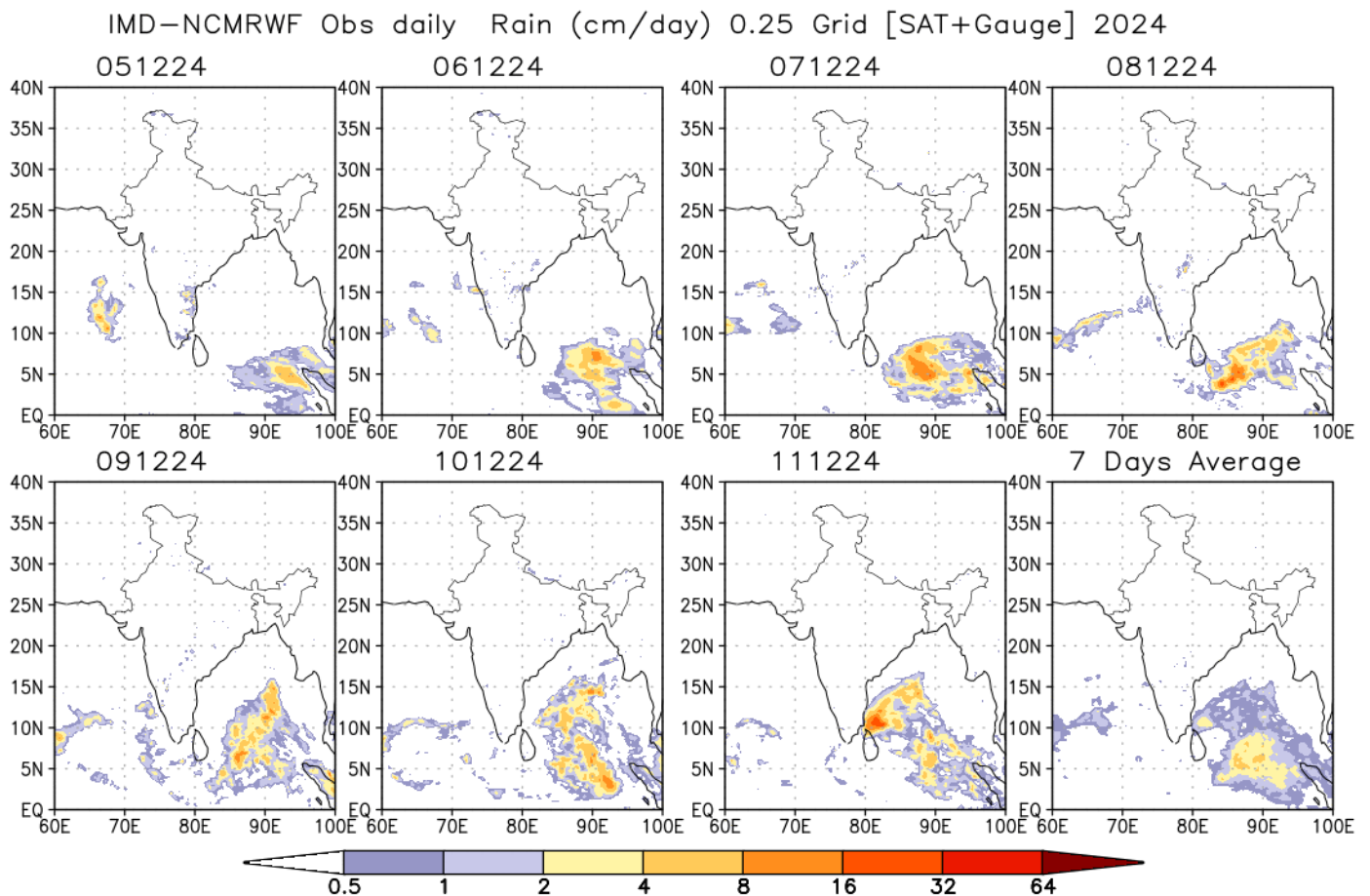


Fig.2: NCMRWF-IMD satellite gauge merged data plots of realized 24 hours accumulated rainfall from 5th December – 11th December, 2024.

Next update: 19.12.2024